



A qualitative investigation of contemporary leadership models for sustainable businesses in times of crises

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Received: 10 April 2024 / Revised: 20 August 2024 / Accepted: 7 September 2024

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Abstract This research aims to systematically synthesize the association between leadership, sustainable business and crisis using the SPAR-4-SLR protocol. The Scopus database was used for the search process. The initial search in the Scopus database using the keywords (“leadership” OR “management” OR “administration” OR “governance” OR “supervision AND “sustainable business” OR “sustainable venture” OR “sustainable start-ups” or “sustainable enterprises” AND “crisis” OR “uncertainty” OR “situation” OR “emergency”) yielded 282 articles from 2002 to 2024, and after applying the inclusion and exclusion criteria, 131 articles were subjected to bibliometric analysis using VOS viewer software for network visualization and performance mapping. The important themes were identified for future researchers related to the three major constructs used as keywords for the analysis. The results revealed that the year 2023 recorded the maximum number of publications with 18 articles. China is the top contributing country with 16 publications on the theme of leadership, sustainable business and crisis, followed by India with 13 publications and the United States with 13 publications. The maximum number

of publications belonged to the business, management, and accounting subject area with 74 research articles and contributed 23% to the overall research area. The top contributing authors belonged to the Universidad Europea de Madrid. The practical examples provided in the present study will help business leaders to better understand the needs of followers by applying the leadership models discussed in the study to tackle uncertain situations effectively.

Keywords SPAR-4-SLR · Leadership · Sustainable business · Crisis · Bibliometric analysis · Systematic literature review

JEL Classification M10

1 Introduction

The present research is focussed on developing the linkage between contemporary leadership that leads to sustainable business even in uncertain times using qualitative analysis. Leadership is about developing an influential relationship between leaders and followers, relying on mutual purpose and shared knowledge (Waseel et al. 2024). Leadership is a means by which individuals may enhance their personal, social, and professional well-being. The impact of leadership on developing sustainable business has its roots in the 2030 agenda for sustainable development (Kumar et al. 2023). The SDG goals provided a roadmap to leaders globally to enhance the well-being of employees, reduce gender inequality, promote a healthy work environment for all, foster innovation, ensure justice and promote accountability for the stakeholders of the organization (Ferrero-Ferrero et al. 2023).

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Effective leadership is an essential determinant of the growth of sustainable organisations (Olinover et al. 2023; Wee et al. 2023). An analysis of leadership models over the years revealed that there is a broad range of leadership hypotheses that clarify the dynamics of the leadership process (Birgisdóttir et al. 2024; Shao 2024). Leadership theories have been established since the inception of the concept, ranging from early classical theories (trait theory) of leadership to contemporary forms of leadership (refer to Table 1), which hold importance in dealing with uncertain circumstances, e.g., the COVID-19 Pandemic (Pathak et al. 2024). Further investigation is needed to delve into the notion of sustainable leadership, which involves incorporating enduring environmental and social factors into leadership strategies (Panigrahi et al. 2024a, b). This encompasses the strategies that leaders may use to effectively manage uncertain situations while still prioritising long-term sustainability objectives. There are limited research studies that explore effective leadership styles and techniques in times of crisis, particularly under unexpected circumstances such as pandemics (Settembre-Blundo et al. 2021). There is a lack of comprehensive studies that explore the development and implementation of sustainable business models in uncertain times (Pimenowa et al. 2023). More research is needed as to how leaders can drive sustainability in uncertain conditions (Y. Wang et al. 2022). The exploration of the linkage between the three constructs i.e., leadership, sustainable business and crisis makes this study novel in terms of its wider applicability in the area. The contemporary leadership models were also highlighted in the present research providing a strong theoretical foundation to the current research. The examples of global leaders and their role in managing crises were also depicted in the present research.

The current research study aims to bridge this gap by analysing extensive literature from the Scopus database for more than two decades of a period (2002–2024). The bibliometric analysis was conducted to understand the trends in the area of research and analyze the top contributing authors, institutions and countries. The cluster analysis further helped to identify the key themes for future research direction. The systematic literature review conformed to the SPAR-4-SLR procedure of identifying the subject area, obtaining the necessary resources, organising the information, refining the data, evaluating the findings, and eventually reporting the results.

To achieve the objectives of the current research the following research questions were formulated:

RQ1: What are the contemporary leadership models that business leaders use to manage crises?

RQ2: What are the bibliographic trends in the area of leadership, sustainable business and crisis over 22 years?

RQ3: What is the performance mapping in the area of research based on influential keywords, most cited authors and sources?

RQ4: What are the future recommendations for researchers based on key themes identified from the study?

The initial search was based on the Scopus database using the keywords “leadership” OR “management” OR “administration” OR “governance” OR “supervision AND “sustainable business” OR “sustainable venture” OR “sustainable start-ups” or “sustainable enterprises” AND “crisis” OR “uncertainty” OR “situation” OR “emergency”, which yielded 282 articles and then the inclusion and exclusion criteria were used to achieve the desired objectives. The first section of the study briefly introduces the research area and its underlying constructs (leadership, sustainable business, crisis). The second section deals with the review of the literature that builds a strong theoretical foundation for the present research. The third section elaborates on the methodology adopted to systematically analyse the literature in the area. The fourth section elaborates on the results of the study. The results were presented in two parts First, bibliographic trends include year-wise trend analysis, country-wise analysis, subject area analysis, and top contributing authors and institutions. Second, Performance mapping includes the most influential keywords, co-citation of authors and documents using Vosviewer software. Finally, the fifth section includes a discussion and future research agenda.

2 Review of literature

Leadership has been defined as a process of influencing the behaviour of individuals, and groups and leading them towards the desired results. Leadership is about developing an influential relationship between leaders and followers and relies upon mutual purpose and shared knowledge (Northouse 2022). Stogdill’s research describes leadership as the act of initiation and maintenance of structure for expectations and interactions. It encompasses both the behavioural and trait-based approaches to leadership (Stogdill 1974).

2.1 Contemporary leadership models

2.1.1 Caritative leadership model

The important study conducted by Bondas on administration and leadership from a caring science viewpoint gave rise to the concept of caring leadership (Bondas 2010, 2018). The term “caritative” comes from the Latin word *caritas*, meaning charity or love, reflecting a leadership style that emphasizes altruism, empathy, and a deep commitment to serving others. Caritative leadership is characterized by a focus on

Table 1 Comparison of contemporary leadership models

Leadership model	Definition	Key aspects	Contextual application
Caritative leadership	Caritative leadership is a concept rooted in the ethics of care, particularly in healthcare and social services, where the leader's actions are grounded in love, compassion, and a deep commitment to the dignity and well-being of others	Compassion, care, moral integrity, and a focus on the human dignity of both patients and staff	Nursing and healthcare leadership
Empowering leadership	Empowering leadership is characterized by a leader's ability to share power with their followers, enabling them to take initiative, make decisions, and solve problems autonomously	Delegation, autonomy, encouragement, and fostering an environment where followers feel capable and motivated to take responsibility	Organizations that value innovation, creativity, and self-managed teams
Responsible leadership	Responsible leadership emphasizes the leader's accountability not just to their organization, but to a broader set of stakeholders, including society, the environment, and future generations	Sustainability, ethical decision-making, stakeholder engagement, and a long-term perspective	Corporate governance, social and environmental responsibility
Authentic leadership	Authentic leadership is based on the idea that leaders should be genuine, self-aware, and transparent, acting consistently with their values and beliefs	Self-awareness, transparency, ethical behavior, and relational authenticity	Effective in building trust within organizations, where leaders' integrity and consistency inspire loyalty and commitment from followers
Ethical leadership	Ethical leadership is defined by leaders who prioritize ethical standards and moral values in their decision-making, behavior, and interactions with others	Integrity, fairness, ethical decision-making, and promoting a culture of ethical behavior within the organization	Education, law and corporate governance, where moral principles are paramount
Adaptive leadership	Adaptive leadership focuses on the ability of leaders to navigate change, addressing complex challenges by encouraging learning, experimentation, and flexibility	Flexibility, learning, problem-solving, and resilience in the face of uncertainty and change	Technology, healthcare, and crisis management, where leaders must guide their organizations through rapid changes and complex challenges
Empathetic leadership	Empathetic leadership is characterized by a leader's ability to understand and share the feelings of others, creating an environment of support, trust, and emotional well-being	Empathy, emotional intelligence, active listening, and relationship building	Effective in environments where emotional well-being and interpersonal relationships are critical, such as in education, healthcare, and human resources

Source: *The authors*

the dignity and humanity of those being led, ensuring that their needs and welfare are central to all decision-making processes (Bondas 2010). Key concepts of caritative leadership are human compassion, caring, service and responsibility, ethical decision-making, authentic presence and mercy (Koldestam et al. 2023; Morvati and Hilli 2023), which can help people during crisis.

The Caritative Leadership Model is primarily utilized in environments where care, compassion, and ethical responsibility are central to operations, such as in healthcare (Arakelian et al. 2020), social work (Bondas 2018), and education (Morvati and Hilli 2023). It can be applied in any setting where the well-being and dignity of individuals are prioritized. This model is used to create a culture of care, ensuring that both the recipients of services (such as patients, students, or clients) and the employees are treated with respect, empathy, and compassion.

Tata Group's implementation of caritative leadership during the COVID-19 epidemic not only safeguarded the welfare of its workers but also enhanced the company's standing as a moral and empathetic employer. The company's conduct during this crisis bolstered its fundamental principles of honesty, respect for citizens, and dedication to social accountability, therefore fostering enduring employee commitment and public confidence (Tripathi and Kumar 2020).

2.1.2 Empowering leadership model

The Empowering Leadership Model is a leadership approach that focuses on enabling and encouraging employees or team members to take ownership of their work, make decisions, and develop their skills. An empowering leader delegates authority and responsibility to the followers to contribute significantly to the organisation's growth (Cheong et al. 2019; Raub et al. 2024). Therefore, empowering leaders can help people combat uncertain circumstances and strengthen them physically and mentally. A leader who exhibits this type of leadership model can help revive people, the economy, and society as a whole to make the planet a safer place to live in during an uncertain situation (Al Otaibi et al. 2023; Kim and Beehr 2023; Pearce and Sims 2002) like the COVID-19 pandemic.

The key concepts of empowering leadership are autonomy and decision-making, competence development, trust and confidence, accountability, and shared vision (O'Donoghue and Van Der Werff 2022). The application of empowering leadership is in project management, which allows team members to take charge of specific aspects of the project, leading to more efficient problem-solving and a stronger commitment to project success. Agile work environments, which rely on flexibility and rapid response to change, benefit from empowering leadership. Team members are encouraged to make quick decisions and adapt to evolving

circumstances (Zheng et al. 2023). Startups and entrepreneurial ventures often operate in fast-paced, dynamic and environments where empowering leadership is crucial. Team members are given the freedom to experiment and take initiative, driving innovation and growth. Empowering leadership can be used in non-profit organizations to engage volunteers and staff, giving them the autonomy to take ownership of their roles and contribute to the organization's mission (Siachou et al. 2020).

Infosys' strategy of fostering empowering leadership resulted in several favourable results. The firm achieved global leadership in the IT sector, renowned for its innovation and exceptional service delivery, not just in India but worldwide. Employee empowerment resulted in increased work satisfaction, reduced attrition rates, and fostered a culture of innovation, enabling Infosys to maintain its competitiveness in a continuously evolving industry. The company's success may be directly attributed to the dedication of its leadership in enabling workers, cultivating a culture of independence, and promoting ongoing education and development (Gupta and Shapiro 2014).

2.1.3 Responsible leadership model

Responsible management or responsible leadership is creating and promoting ethically sound relationships with all organisation partners (Ur Rehman et al. 2023). Responsible leadership during an emergency is believed to adequately engage partners and impact community responses emphatically (Mehta et al., 2022). Responsible leadership offers a different perspective on building relations and taking moral actions to engage stakeholders. In times of crisis, a community anticipates that its public leaders should assume responsibility and unravel the issue by fronting up and practising duty and responsibility (Waldman and Balven 2014; Zhao et al. 2023). For a democratic country like India, with a population of 1.33 billion, getting public support in this tough time was a considerable challenge. However, the honourable Prime Minister emerged as a responsible leader and connected with the masses to observe a nationwide lockdown. Prime Minister Modi used collective consciousness during this outbreak, which unified people nationwide to stay indoors (Mehta et al. 2022).

Prime Minister of India's appearance on various media platforms further empowered the population to cooperate with government agencies to combat the battle against the coronavirus pandemic. One of the most significant characteristics of a responsible leader is empathy and compassion, exhibited in PM Modi's leadership style, where the focus is on humanity and safeguarding people, not the economy (Mehta et al. 2022). The lessons learned from this pandemic and key strategies adopted by public leaders can be applied by business leaders to act responsibly in case of an

emergency. It enabled government and public institutions to cope with confusion by continuing open collaboration, confidence, and strong citizen participation (Mehta et al. 2022).

ITC Limited's responsible leadership has not only bolstered its business but also made substantial contributions to the socio-economic advancement of India. The firm has established standards in sustainability, rural development, and corporate responsibility, positioning itself as a frontrunner in the sector. ITC has gained acclaim in both India and beyond for its approach as a firm that effectively combines profit and mission. The instance of ITC Limited exemplifies the successful implementation of responsible leadership, which generates enduring value for both the company and society. ITC has shown the incorporation of sustainability and social responsibility into its fundamental activities, illustrating that responsible leadership is not only morally upright but also strategically advantageous, resulting in long-term prosperity and a beneficial influence on society and the environment (Anbarasan and Sushil 2018).

2.1.4 Authentic leadership model

The Authentic Leadership Model emphasizes the importance of leaders being genuine, transparent, and true to themselves in their interactions with others. Authentic leaders are characterized by their self-awareness, ethical behaviour, and commitment to building open, honest relationships with their followers (Ostermeier et al. 2024). This leadership style is rooted in the idea that authentic leaders are more effective because they inspire trust, foster loyalty, and create a positive, supportive work environment. The key components of authentic leadership are self-awareness, relational transparency, balanced processing of information, internalized moral perspective, and authentic relationships (Schoofs et al. 2024).

Leaders who possess a genuine understanding of their values and ethical boundaries before a crisis are more adept at handling difficult choices and difficulties, even during times of hardship (Butterworth et al. 2023; Gardner et al. 2011). Moreover, it is acknowledged that individuals must exhibit authenticity to effectively navigate a crisis. One aspect of this leadership is the demonstration of moral principles and emotions derived from self-awareness, enabling individuals to suspend their egos and engage in an impartial analysis of information. One crucial aspect is that true leaders have a high degree of resilience against deception in times of crisis. According to Farrukh et al. (2023), authentic leaders possess the necessary skills and knowledge to handle crises situations and evaluate possibilities more objectively.

Under Anand Mahindra's authentic leadership, the Mahindra Group not only weathered the global financial crisis but also emerged stronger. The company's ethical approach and focus on long-term sustainability paid off, as it was able to

retain its talented workforce, maintain strong relationships with customers and suppliers, and continue investing in growth opportunities. The Mahindra Group's resilience during the crisis, coupled with its commitment to ethical practices, enhanced its reputation as a trustworthy and socially responsible organization. This approach also positioned the company for future success, enabling it to capitalize on new opportunities as the global economy recovered (Sachdev and Iyer 2022).

2.1.5 Ethical leadership model

Ethical Leadership is a leadership style characterized by the adherence to moral principles and values in guiding one's behaviour and decision-making. Ethical leaders prioritize fairness, integrity, and transparency, and they strive to lead by example in maintaining high ethical standards. They are committed to doing what is right, even when it may not be the most advantageous or popular course of action. The key aspects of ethical leadership are integrity, fairness, accountability, transparency, respect, moral principles, and encouraging ethical behaviour (Kim and Beehr 2023).

Ethical leadership focuses on a leader's qualities, values, vision, voice, and virtue. An ethical leader has core values: integrity, authenticity, and compassion that can help him to tackle uncertain situations (Hoang et al. 2023; Saha et al. 2020). The professional values of ethical leaders include creativity, customer service, and social responsibility, which helped the organisations sustain even during the coronavirus pandemic. An ethical leader aspires to attain organisational goals even in uncertain times. An ethical leader inspires followers to achieve the desired goals. The ethical virtues of leaders help to transform society and uplift the conditions of employees in times of distress (Aftab et al. 2023).

Yvon Chouinard's leadership at Patagonia provides a compelling example of ethical leadership in action. His commitment to integrity, fairness, transparency, and long-term sustainability has guided Patagonia through its growth and success while maintaining strong ethical principles. This case study highlights how ethical leadership can create a positive impact on both business performance and societal well-being (Caggiano et al. 2024).

2.1.6 Adaptive leadership model

Adaptive Leadership focuses on the ability of leaders to navigate complex and changing environments by encouraging flexibility, resilience, and innovative problem-solving. Unlike traditional leadership models that emphasize control and authority, adaptive leadership is about responding to challenges that require new ways of thinking and acting. The key components of the adaptive leadership model are

adaptation, innovation, managing uncertainty and promoting resilience (Wang et al. 2024).

The advent of the COVID-19 pandemic had a profound impact on human society. It posed a serious threat to the economies worldwide because the change was drastic, and every decision that had to be taken by the leaders was questioned regularly. However, this pandemic created a severe problem for the leaders to carry out the smooth functioning of the organisations in such distress caused by this outbreak (Georgiadou and Hoidn 2023). Amidst the epidemic, the Prime Minister of New Zealand demonstrated adaptive leadership by offering the population of New Zealand a well-defined, sequential plan for escalating and de-escalating situations. The sequential plan of PM included clear communication, phased response, inclusivity, and flexibility, which helped to neutralize the situation. Adaptive leadership helped the nations to neutralise the situation (Beilstein et al. 2021). The adaptive leadership model can be understood using four A's mnemonic devices: "Anticipation of likely future, trends, and choices available; articulation of the needs to build collective understanding and support for action; adaptation so that responses can be adjusted as needed; and accountability", which provides maximum transparency in making changes (Beilstein et al. 2021).

Under Reed Hastings' adaptive leadership, Netflix successfully transitioned from a DVD rental service to a leading streaming platform, revolutionizing the entertainment industry. The company's ability to innovate, adapt to changing market conditions, and engage its employees contributed to its rapid growth and competitive advantage. Netflix's success in creating original content, personalizing user experiences, and maintaining a flexible approach to business challenges demonstrates the effectiveness of adaptive leadership in navigating complex and evolving environments (Goldstein et al. 2010).

2.1.7 Empathetic leadership model

The empathetic leadership model is a leadership approach that emphasizes understanding, compassion, and emotional intelligence in interactions with team members. The key components of the empathetic leadership model are active listening, emotional intelligence, a supportive environment, understanding and compassion, and collaboration. Amidst a crisis, leaders must prioritise one of the most crucial facets of their role: exerting a positive impact on others' lives. In times of uncertainty, a leader needs to acknowledge the emotional and professional challenges that workers and their families encounter (Deliu 2019). Leaders are required to demonstrate empathy and be receptive to empathy from others, all the while being cognizant of their well-being. The ability of leaders to absorb information, maintain composure, and exercise good judgment may decline when stress,

fatigue, and uncertainty increase during a crisis. By fostering an environment that promotes colleagues' expression of concerns and adherence to warnings, there is an increased likelihood of mitigating functional impairments. Leaders' proactive commitment to the well-being of their staff may contribute to their sustained performance over the duration of a crisis (Beilstein et al. 2021).

The empathetic leadership model has contributed to high levels of employee satisfaction and retention at Starbucks. Many partners report feeling valued and supported, leading to a motivated workforce. Happy employees often translate to happy customers. This strong internal culture is reflected in the high quality of customer service, reinforcing Starbucks' brand reputation. Starbucks has consistently reported strong financial performance, indicating that investing in employee well-being also benefits the bottom line. The Starbucks case study illustrates how empathetic leadership can be effectively implemented in a corporate environment. By focusing on active listening, emotional intelligence, and creating a supportive and inclusive culture, companies can enhance employee satisfaction, improve collaboration, and ultimately drive business success (Caggiano et al. 2024).

2.1.8 Research gap

The focus of this research was to consolidate the existing knowledge on leadership model and sustainable business, providing a starting point for researchers and practitioners seeking to witness the impact of leadership model during crisis and offering suggestions for future research. It is also been noted that previous studies have focussed on qualitative investigation on corporate sustainability. Few previous researchers have also focused on quantitative research on leadership style and leadership during crisis. No study been seen collating all the work on leadership style model and sustainable businesses during crisis (refer to Table 2).

2.2 Leadership in times of crisis: sustainable business practices

Leadership in building sustainable businesses, especially during crises, involves guiding organizations to adopt practices that balance economic success with environmental and social responsibility. There are various examples of visionary leaders, who have exhibited distinctive styles in managing crises. Under Paul Polman's leadership, Unilever became a global leader in corporate sustainability, demonstrating that integrating sustainability into the core business strategy could drive growth and resilience, even during the global financial crisis (Polman and Winston 2022). Yvon Chouinard is widely recognized as a pioneer in sustainable business practices, and Chouinard's leadership has inspired other companies to adopt similar commitments, showing

Table 2 Notable studies on the importance of leadership in sustainable business in times of crisis

Authors and year	Findings
Tandon et al. (2024)	The findings underscore significant implications for B2B organizations, emphasizing the necessity of combining entrepreneurial activities with sustainability initiatives
Ercantan et al. (2024)	The study's results indicate that entrepreneurial leadership cultivates a conducive and supportive environment in the workplace, resulting in a sustainable competitive advantage for firms
Sörensson and Ghannad (2024)	Companies must have economic sustainability in order to sustain an unforeseen event such as a pandemic
Patra and Lenka (2024)	The important characteristics were explored to have an impact on the sustainable business practices of entrepreneurial enterprises include the size of the company, leadership, uncertainty, gender, country/location, education, and tourism
Ulupui et al. (2024)	Increasing the adoption and encouraging sustainable business practices in MSMEs through risk management
Liu et al. (2024)	The subject of sustainability in business is increasingly captivating the attention of investors, stakeholders, and enterprises as a means of addressing and overcoming unpredictability
Sahoo et al. (2024)	Senior management's role in improving sustainable business performance using big data manufacturing activities and green manufacturing practices
Kahveci (2023)	A methodical way to comprehending the facts of small and medium-sized enterprises (SMTEs) during a crisis, namely through looking at their immediate survival strategies and long-term efforts to maintain sustainability in response to the COVID-19 pandemic
R. Liu et al. (2023)	The significance of green HRM practices, responsible leadership, and green innovation techniques for achieving sustainable business performance in competitive business world
Freze et al. (2023)	Importance of sustainable business leadership in the post COVID-19 pandemic times
Mattera and Soto (2023)	The importance of sustainable business models in building corporate reputation and resilience in conflict like situations
Ireta-Sanchez (2023)	Innovation, digitalisation and leadership practices are emerging as the primary catalysts for the sustainable economic transformation of small and medium firms in the post-pandemic era
Mousa (2023)	The sustainable business practices adopted by the CEO helped the organization to sustain in during and after the COVID-19 crisis
Chen and Wu (2022)	The research results provide a practical approach for businesses to manage unexpected crises and improve their capacity to continue sustainable business operations

Source: The authors

that sustainability can be a foundation for enduring success. Chouinard, founder of Patagonia, has consistently integrated environmental responsibility into the company's mission, even during economic downturns. He made decisions such as using organic cotton and promoting the repair and reuse of products to minimize environmental impact (Jones and Gettinger 2016).

Despite facing numerous crises, Elon Musk's leadership has made Tesla a leader in the electric vehicle and clean energy industries, accelerating the global shift toward sustainable transportation and energy (Khan 2021). Lisa Jackson's leadership has made Apple a model for sustainability in the technology industry, demonstrating that tech giants can adopt ambitious environmental goals while maintaining profitability and innovation. As Apple's Vice President of Environment, Policy, and Social Initiatives, Lisa Jackson led efforts to reduce Apple's environmental footprint, including transitioning to 100% renewable energy for all global facilities and working towards carbon neutrality by 2030.

These business leaders exemplify how sustainability can be a guiding principle during times of crisis, leading to innovative solutions that balance environmental stewardship with long-term economic success. Their actions show that

prioritizing sustainability not only helps navigate immediate challenges but also builds a resilient foundation for future growth. These examples illustrate how effective leadership during crises often involves a combination of empathy, clear communication, decisive action, and a strong vision for the future. Leaders who successfully navigate crises can inspire their followers, maintain stability, and set the stage for recovery and growth.

3 Methodology

The primary objective of this study was to critically examine several contemporary leadership models (Panigrahi et al. 2024a, b) that hold importance in the uncertain and lead to sustainable business. A domain-based systematic literature review was conducted that includes a rigorous process that entails the systematic collection, organisation, and assessment of current literature within a particular domain of research. The SLR was carried out in three phases namely assembling, arranging, and assessing. The term "assembling" pertains to the process of locating and acquiring pertinent material, while "arranging" entails organising and refining the literature. On the other

hand, “assessing” requires evaluating and presenting a report on the literature (Paul et al. 2021). The current research study used the Scientific Procedures and Rationales for Systematic Literature Reviews Protocol (SPAR-4-SLR) to examine the articles in the Scopus database, as shown in Fig. 1. Scopus is the most comprehensive bibliographic database that includes metadata of various sources used for carrying out scientific research (Medias et al. 2024). The Scopus database provides simple access to high-quality, diverse scholarly data in the sciences, social sciences, arts, and humanities. So it was used for the present research (Sharma et al. 2023).

During the assembling phase, which comprised identification and procurement, a preliminary search for relevant literature was conducted. The database was examined using the search query that follows. TITLE-ABS-KEY (leadership” OR “management” OR “administration” OR “governance” OR “supervision” AND (“sustainable business” OR “sustainable venture” OR “sustainable start-ups” or “sustainable enterprises”) AND (“crisis” OR “uncertainty” OR “situation” OR “emergency”). 282 documents were found during the search. Additionally, the research questions were developed, and journal papers from 2002 to 2024 were included in the study.

Based on the bibliometric analysis, the records were organised and purified during the arranging phase. Bibliographic trend analysis was based on the year-wise trend in the research area, country-wise trend, research contribution based on the subject area, and top contributing authors and institutions. Performance analysis was also conducted based on the most influential keywords, co-citations of authors and documents. Based on inclusion and exclusion criteria, the records that were found during the first search ($n=282$) were filtered. There were 212 papers found in the stated topic areas of business, management, and accounting as well as social sciences and decision sciences. The restriction was then added to the document type (articles), producing 139 articles. Next, a limit was applied to the source type (Journal=137) and language type (English=131).

The assessment phase, which comprises reporting and evaluation, is the last stage. Vos Viewer software was used to conduct a bibliometric analysis of 131 publications. Performance mapping and the bibliographic analysis from 2002–2024 served as the foundation for the bibliometric study of 131 publications. Future research themes were also examined. The final search string was:

4 Results

4.1 Bibliographic trends

4.1.1 Year-wise trend analysis (2002–2024)

The year-wise trend analysis revealed that publications in the areas of leadership, sustainable business, and crisis saw the highest growth rate from 2015 to 2024. The year 2023 recorded the maximum number of publications with 18 articles. The period from 2002 to 2014 saw the lowest number of publications (refer to Fig. 2). The growth in this area of research indicated that there is growing interest in studying the relationship between contemporary leadership models and sustainable business. Contemporary leadership styles adopted by global leaders lead to sustainable businesses even in uncertain times and identifying the appropriate style is a challenge for the organizations. More research in this area shall provide a broad perspective in understanding the interplay between leadership style and the sustainability of businesses in uncertain times.

4.1.2 Country-wise trend analysis (2002–2024)

Figure 3 depicts that China is the top contributing country with 16 publications on the theme of leadership, sustainable business and crisis, followed by India with 13 publications and the United States with 13 publications. The United Kingdom is the third largest country contributing to the research in the said field with 11 publications in 22 years. Australia, the Russian Federation and Spain have equally contributed to this area of research with 8 publications on the topic of leadership, sustainable business, and crisis. Czech Republic and Germany are in the fifth position in the top contributing countries with 7 number of publications, followed by Romania with 6 research articles (refer to Fig. 3). The increasing growth rate in terms of several publications from different countries indicates the growing importance of the current theme that shows the intersection between three major constructs i.e., leadership, sustainable business and crisis.

4.1.3 Research contribution based on the subject area

The maximum number of publications belonged to the business, management, and accounting subject area with 74 research articles and contributed 23% to the overall research area. The social sciences field is the second highest contributing subject area with 73 research articles followed by environmental sciences with 47 research articles (refer to Fig. 4). Overall different subject areas contributed to this field of study and depicted that the researchers are interested in looking into the dynamic relationship between leadership

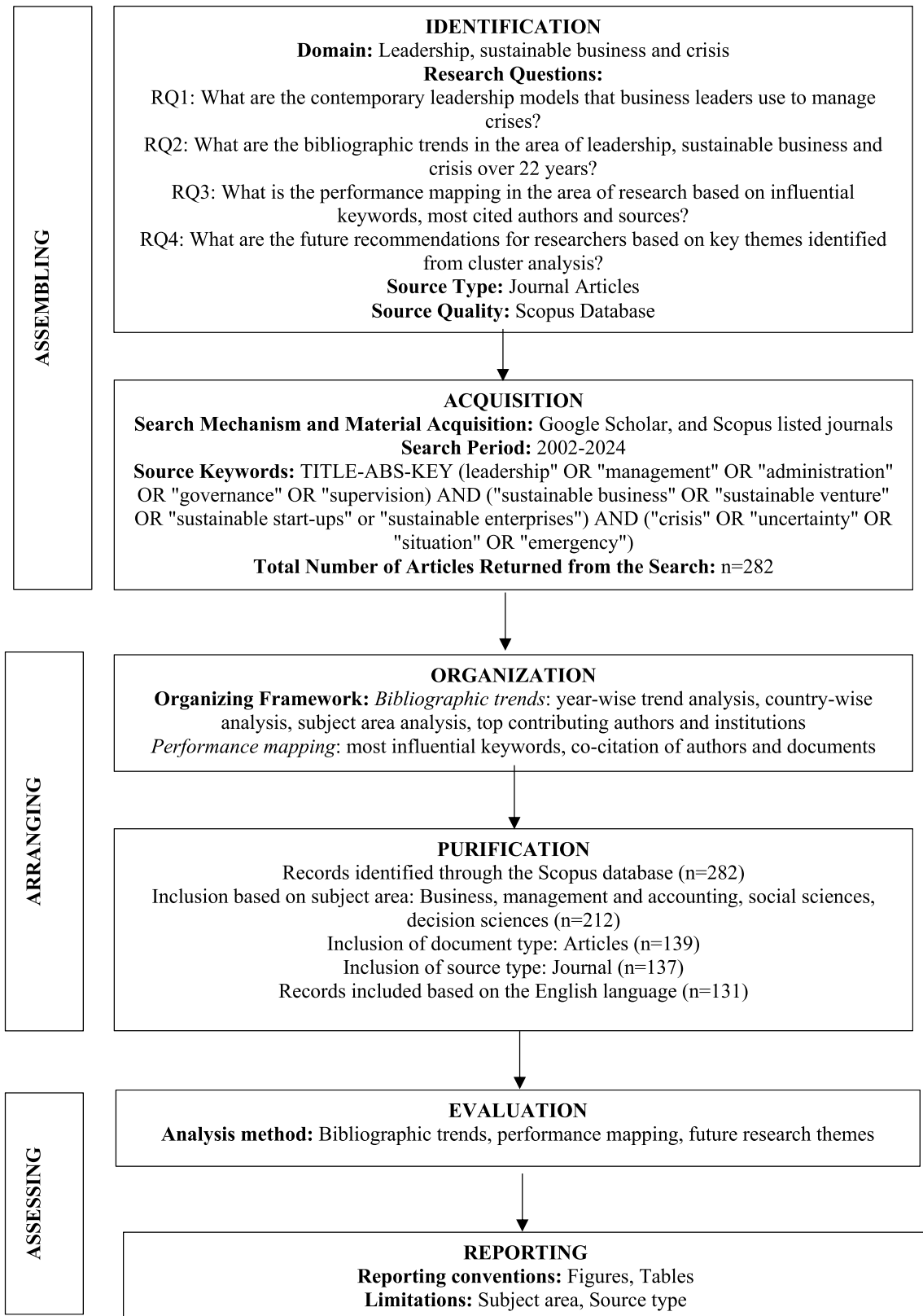


Fig. 1 The SPAR-4-SLR protocol used for the research. Source: Adopted from Paul et al. (2021)

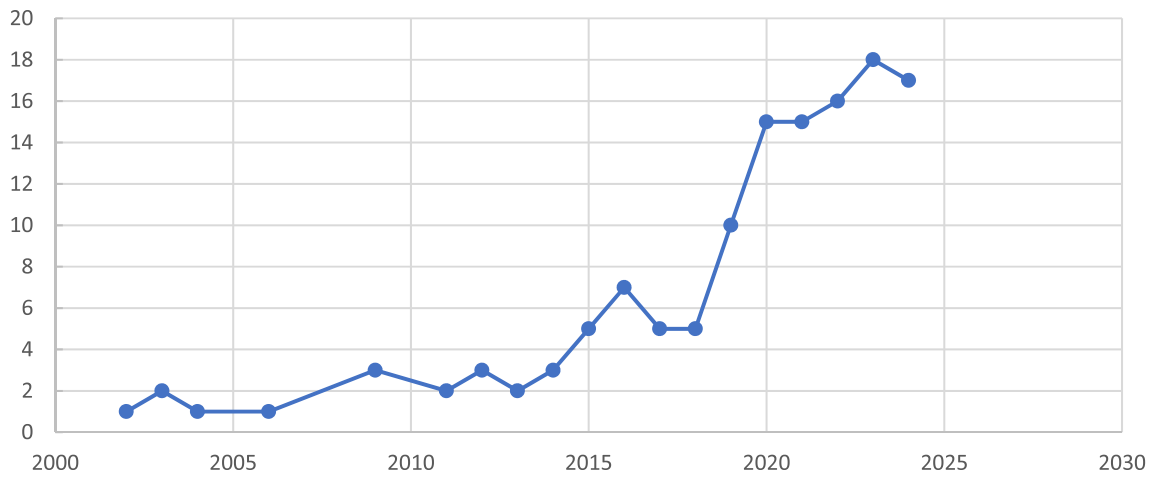


Fig. 2 Year-wise trend analysis from 2002 to 2024. Source: The Scopus database

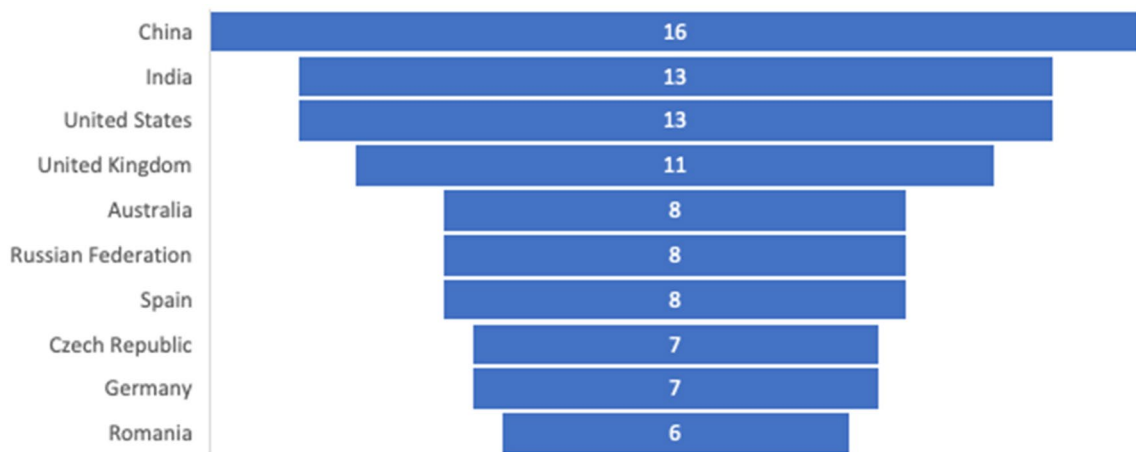


Fig. 3 Country-wise trend analysis from 2002 to 2024. Source: The Scopus database

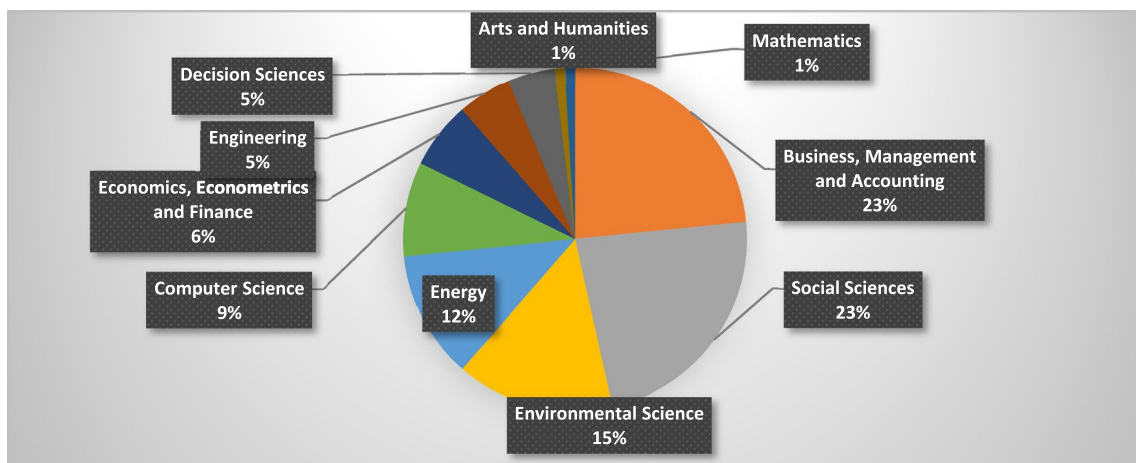


Fig. 4 Contribution based on the subject area of research. Source: The Scopus database

and sustainable business in times of crisis. Therefore, this study shall help to analyse the trends in the field using various qualitative tools (Fig. 5).

4.1.4 Top contributing authors and institutions

The top contributing authors Mattera, M. (publications = 4), Gava, L. (publications = 3) and Alba Ruiz-Morales, C. (publications = 2) (refer to Fig. 6) are from the Universidad Europea de Madrid (refer to Fig. 5). This university is among the top universities that are contributing the maximum in the field of leadership, sustainable business and crisis. The second-highest university in terms of publication number is Mahidol University (3 publications) followed by

VSB- Technical University of Ostrava and Czech University of Life Sciences Prague with 3 publications each (refer to Fig. 5).

4.2 Performance mapping

4.2.1 Most influential keywords

In bibliometric analysis, the term “co-occurrence” refers to the frequency at which two or more keywords occur together in a given group of documents. Authors have used a minimal threshold of two, comparable key counts to generate significant associations. The threshold for inclusion is set at 133, indicating that only the 133 keyword pairs that co-occur most often are included in Fig. 7. The most frequently

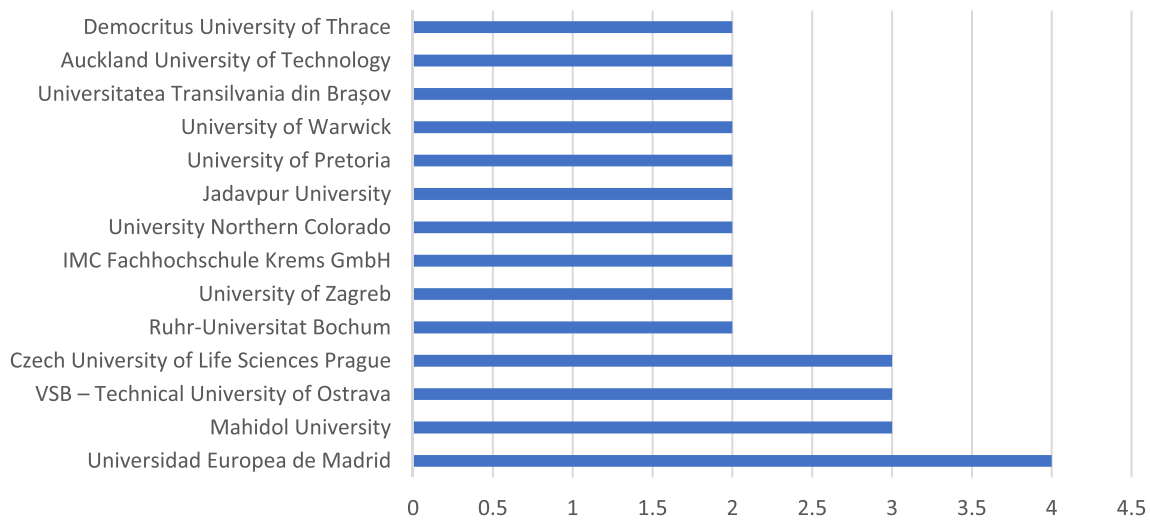


Fig. 5 Top contributing institutions. Source: The Scopus database

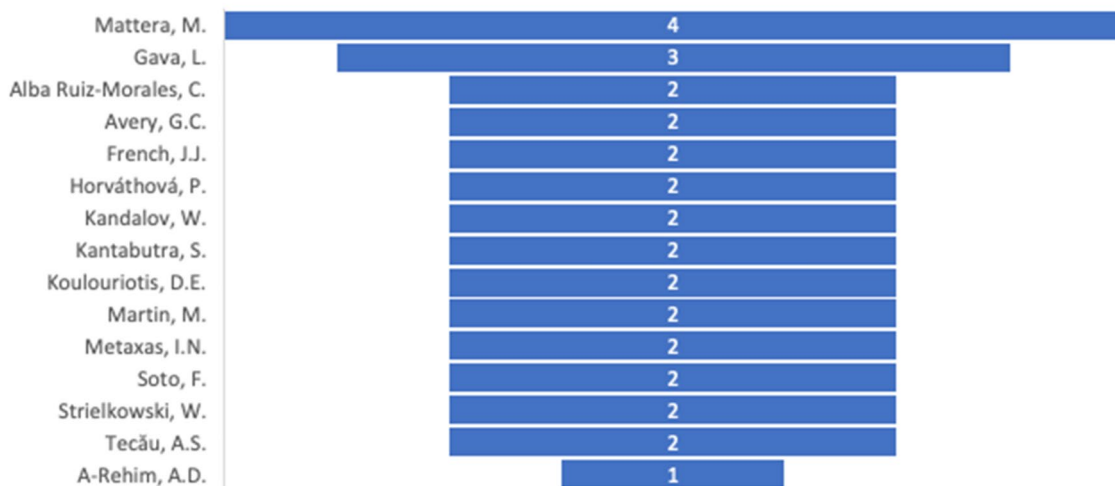


Fig. 6 Top contributing authors. Source: The Scopus database

Table 3 Most influential keywords

Keywords	Total link strength	Occurrences
Sustainability	238	45
Sustainable development	202	34
Business	138	20
Covid-19	99	18
Sustainable business	94	14
Business development	84	12
Leadership	59	11
Innovation	51	10
Corporate governance	34	9
Corporate social responsibility	34	9
Crisis management	37	8
Entrepreneurship	29	8
Supply chain management	48	8
Corporate strategy	49	7
Corporate sustainability	56	7
Stakeholder	51	7
Business models	18	5
Decision making	35	5
Governance approach	28	5
Management	42	5

Source: VOSviewer version 1.6.20

5 Discussion and implications of research

Various leadership studies have been undertaken throughout the past decade, involving more qualitative, contextual, and empirical data. This study focused on understanding contemporary leadership models and their role in uncertain circumstances. This study further emphasised the importance of the SPAR-4-SLR approach in understanding the bibliographic trends (Jena et al. 2023) in the research that highlight the publication trends and contributions of authors, and institutions in the field. The COVID-19 pandemic has impacted both society and the economy. It has posed a challenge to leaders globally. It cannot be determined aptly which leadership model is suitable for managing crises (Saeed et al. 2023). However, the leadership models discussed in the literature, namely the caritative leadership model, empowering leadership model, responsible leadership model, authentic leadership model, ethical leadership model, adaptive leadership model, and empathetic leadership model shall help business leaders to adopt these styles and tackle uncertain situations.

The earlier research did not show the intersection between the three major constructs i.e., leadership, sustainable business and crisis. The studies conducted by various researchers highlighted the importance of entrepreneurial leadership practices to build sustainable businesses (Ercantan et al. 2024). Various factors of sustainability were also identified to tackle uncertain situations by researchers including economic sustainability, environmental sustainability, and social sustainability indicating its impact on the organizations

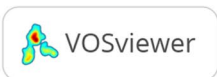
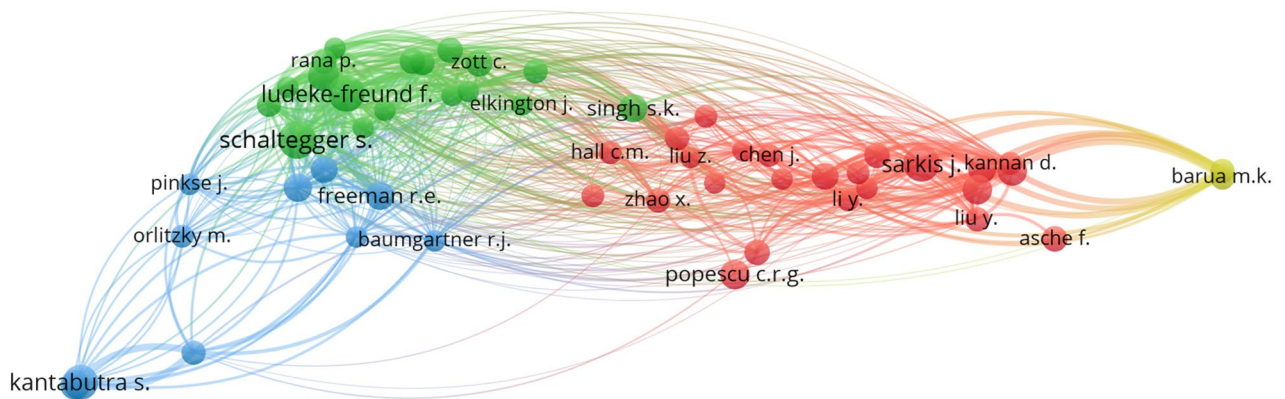


Fig. 8 Authors co-citation analysis. Source: VOSviewer version 1.6.20

Table 4 Authors co-citation with total link strength

Authors	Total link strength	Co-citations
Schaltegger, S	690	33
Sarkis, J	667	32
Ludeke-freund, F	733	30
Kantabutra, S	261	28
Evans, S	595	22
Govindan, K	443	21
Sarkar, B	111	21
Avery, G.C	247	20
Popescu, C.R.G	33	20
Freeman, R.E	349	19
Porter, M.E	261	19
Zhu, Q	465	19
Singh, S.K	179	18
Barua, M.K	427	14
Prakash, C	427	14

Source: VOSviewer version 1.6.20

(Mattera and Soto 2023; Sörensson and Ghannad 2024; Tandon et al. 2024). However, none of the studies focussed on the qualitative aspects of how businesses sustain in unforeseen circumstances with dynamic leadership styles. Many factors impacted sustainable business practices such as the size of the firm, gender, education and leadership. However, an insignificant amount of research found that contemporary leadership models help leaders build sustainable organizations that will sustain uncertain circumstances

(García-Cortijo et al. 2024; Mattera et al. 2021; Patra and Lenka 2024).

The importance of strategies that guide business leaders to survive in uncertain circumstances and manage downside risk was emphasized by researchers for the growth of SMEs (Freze et al. 2023; Panigrahi et al. 2024a, b; Ulupui et al. 2024). The role of responsible leadership in achieving sustainable performance was highlighted in gaining a competitive advantage. However, the comparison between contemporary leadership styles, sustainable business and crisis was not illustrated in earlier studies using bibliographic trends and performance mapping.

The first research question related to contemporary leadership models and their application in times of crisis by business leaders was highlighted. The importance of leadership models such as caritative, empowering, responsible, authentic, adaptive, empathetic and ethical in different situations and contextual settings was also highlighted. The practical examples of leaders exhibiting their leadership style in crisis were also discussed bringing about the relevance of the research topic.

The second research question was addressed in the present study by analyzing the bibliographic trends from 2002 to 2024. The results revealed that the research in this area of study has grown in the past two decades and gaining momentum. In 2023 the maximum number of publications were recorded on the theme of leadership, sustainable business and crisis. China was among the top contributing countries in terms of publications. India also majorly contributed to the research and held the second position along with the

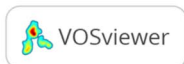
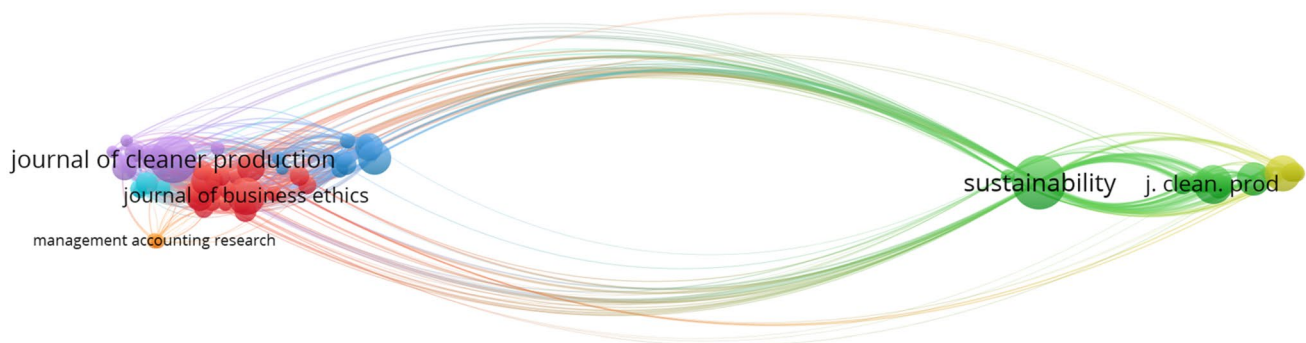


Fig. 9 Sources: co-citation analysis. Source: VOSViewer version 1.6.20

Table 5 Co-citation of major sources

Journal	Co-citations	Total link strength
Sustainability	176	3286
Journal of cleaner production	132	6058
Journal of business ethics	82	2117
International journal of hospitality management	64	2262
Business strategy and the environment	49	2138
Journal of business research	46	2289
Total quality management	44	2124
Academy of management review	43	1477
International journal of production research	37	2423
International journal of production economics	36	2081

Source: VOSViewer version 1.6.20

USA. The Universidad Europea de Madrid contributed the maximum in the said field and the top contributing authors were also from the same university, which included Mattera, M. (publications = 4), Gava, L. (publications = 3) and Alba Ruiz-Morales, C. (publications = 2).

The third research question was addressed with the help of Vosviewer software. The network visualization showed the keyword clusters and co-citation analysis of authors and documents. The performance mapping showed that keywords like sustainability, business, COVID-19, leadership, innovation, entrepreneurship, etc. appeared most prominently in the network diagram and indicated the growing importance of sustainable business practices that may help to tackle uncertain circumstances under the influence of visionary leaders. Sustainability Journal emerged to be the most influential journal in terms of co-citations.

The fourth research question was addressed by identifying the key themes related to the future direction of researchers. The themes that emerged from the analysis were leadership and crisis, stakeholder engagement and leadership style in crisis, digital transformation and crisis leadership, cross-cultural comparisons, the psychological well-being of leaders during crisis, ethical leadership, corporate social responsibility and crisis leadership, and remote leadership and crisis management.

5.1 Implications

The present research will help business leaders implement contemporary leadership models in organisations to increase employees' effectiveness through their constant upliftment in times of crisis. The contemporary leadership models implemented by leaders empower the followers to measure a leader's effectiveness in creating an environment conducive to growth and development.

This research highlighted the importance of Contemporary leadership and its role in bringing flexibility to the organization, ethical decision-making, and a people-centred approach to sustaining businesses through crises (Fox et al. 2020). Leaders who integrate these elements can better navigate challenges and ensure long-term success and sustainability. The implication of the paper comes with fostering innovation, enhancing ethical decision-making, employee morale, transparency and long-term sustainability aspects in the business (Singh et al. 2024).

The theoretical implications of contemporary leadership models during crises highlight the importance of adaptability, ethical behaviour, collaboration, and resilience (Meher et al. 2023). These theories suggest that effective leadership in times of crisis involves not just managing immediate challenges but also shaping organizational culture and strategy in ways that promote long-term sustainability and success (Tasselli and Sancino 2023).

The research will help business leaders to better understand the needs of followers by applying the contemporary leadership models discussed in the study to tackle uncertain situations. The leaders can select the most appropriate leadership style discussed in the study based on what the situation demands. The society shall primarily benefit from the present study as this research will enlighten the people about a leader's role in tough times and help them sustain against all odds of Crises.

5.2 Future research/limitations

This research has only offered valuable insights into the actions that a leader may take to address an unpredictable circumstance and effectively react to the lethal epidemic of the coronavirus. However, the research in this area is still nascent, and further exploratory studies have to be conducted in the same field. Due to time constraints, only a few contemporary leadership models could be identified. Further, quantitative research could be conducted to test the leadership models discussed in the study empirically. This study offers a framework for aspiring researchers to explore the correlation between various leadership styles and their efficacy in addressing ambiguous circumstances, which cannot be predicted but can be controlled within a limit. More longitudinal studies are required to be explored under the given theme. The present research also explored various themes and identified the pressing question around the respective area (refer to Table 6).

6 Conclusion

In the present VUCA world contemporary leadership style is a necessity where leaders understand and adapt with

Table 6 Future research direction

Themes	Future research direction
Leadership and crisis	How leadership decisions during crises influence the sustainability of businesses?
Stakeholder engagement and leadership style in crisis	How do leadership approaches influence stakeholder trust during crises?
Digital transformation and crisis leadership	What leadership strategies are most effective in integrating technology for sustainability during technological disruption
Cross-cultural comparisons	How do cultural differences influence the application and success of contemporary leadership models in crises?
Psychological well-being of leaders during crises	How does the psychological well-being of leaders influence their effectiveness during crises?
Ethical leadership and crisis management	How does ethical leadership impact organizational sustainability during crises?
Promoting corporate social responsibility (csr) during crises	What impact does a focus on CSR have on the sustainability of businesses during and after crises?
Remote leadership on crisis management	How does remote leadership affect crisis management and sustainability efforts?

Source: The authors

changing dynamics of business, been able to be flexible with technological disruption in the globally connected world. The Contemporary leadership is always guiding organizations during crises, but the success of contemporary leaders depends on a leader's ability to adapt with the specific challenges and opportunities. Contemporary leadership style characterised by an emphasis on action, excessive directive, responsive, and more human-oriented (Deloitte, 2020) is the need of an hour. Crises management tends to propagate in three phases: respond, recover, and thrive to achieve the new normal. An emphatic or responsible leader with a quick response time will instantly help manage crises. As businesses continue to face unprecedented disruptions, the need for leadership that is both dynamic and grounded in sustainable practices will always be very critical for businesses. The role of leaders is very crucial for the employee mindset development or the overall culture of the organization. Especially during the crisis time leadership style helps in boosting confidence in the market, corporate governance maintenance, ethical practices and being entrepreneurial in general.

Funding No financial support was received for conducting this study.

Declarations

Conflicts of interest The authors have no competing interests.

Human and animals rights The research was conceptual in nature and involved a systematic literature review using the SPAR-4-SLR protocol. This does not involve any human participation.

Informed consent No ethical approval was required for the present study as this was a review-based paper.

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